Improving the Reliability and Resilience of Electric Power by Cost-Effective Undergrounding and High-Performance Installation and Maintenance Technologies

New Program Development Workshop
Day 1 Breakout Session
Group B Summary
Facilitator: Dr. Bob Ledoux, ARPA-E Program Director

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Cost is King!

- The group suggests that **increasing reliability, resiliency** and **decreasing overall cost** is the key to undergrounding
  - Economic return required to make the practice more appealing to stakeholders
    - Boring costs that could reach ½ to ⅓ of the current price is highly attractive
  - Increased reliability of splicing further increases ROI
  - Predictive maintenance reduces O&M cost

ARPA-E Hard R&D Areas of Focus

1. Sensing - identifying potential failures with long lead time – **Predictive maintenance**
   - Good spatial resolution
   - How to manage and triage information
2. Splicing – **Lowered installation cost and increased reliability**
   - Applicable to existing and new undergrounding
   - Important safety benefit
   - Long term reliability is crucial
3. Boring/Trenching – **Minimize time and manpower**
   - Major cost driver ?
   - Metrics are crucial – (HV, diameter, etc.)
   - “Steering” is crucial
4. Mapping – **Increased accuracy**
   - Surface and drill head
   - Heavy lift to change regulations

Cost is King!

Cost

- Increasing reliability, resiliency and decreasing overall cost should be the focus for UG'ing FOA
  - Economic return is going to be what's required to make the practice more attractive for the stakeholders (Boring cost half to a third of the price of current methods is attractive)
  - Increased reliability of splicing further increases ROI
  - Predictive maintenance reduces O&M cost

• ARPA-E Hard R&D Areas of Focus

- Sensing - identifying potential failures with long lead time – predictive maintenance
  - Good spatial resolution
  - How to manage and triage information
- Splicing – installation cost and reliability
  - Applicable to existing and new Ug'ing
  - Important safety benefit
  - Long term reliability is crucial
- Boring/Trenching – major cost driver ?
  - Minimize: time and manpower
  - Metrics are crucial – (HV, diameter, etc.)
  - "Steering" is crucial
- Accurate mapping
  - Surface and drill head
  - Heavy lift to change regulations